# Rapid Aerial Small Methane Leak Survey (RASMLS), 5th Quarterly Report, Public Version

**December 30, 2016**

**Date of Report:** 5th *Quarterly Report-December 30, 2016*
**Contract Number:** *DTPH5615T00016*
**Prepared for:** *DOT, PHMSA*
**Project Title:** *Rapid Aerial Small Methane Leak Survey*
**Prepared by:** *Ball Aerospace & Technologies Corp.*
**Contact Information:** *Phil Lyman, plyman@ball.com 303.939.6869 & Jarett Bartholomew, jbarthol@ball.com 303.939.5951*
**For quarterly period ending:** *December 31, 2016*

## 1.0 Funds and Work Completed During this Quarterly Period:

The RASMLS project continues to slip schedule for milestone completion as of the end of the 5th quarter. This is due to a delay in delivery of the 10 kHz laser assembly which is a critical component of the prototype instrument. **Figure 1-1** shows the value of milestones achieved vs. the value of the milestones planned through the fifth quarter. Section 1.1 provides detail on milestone status.

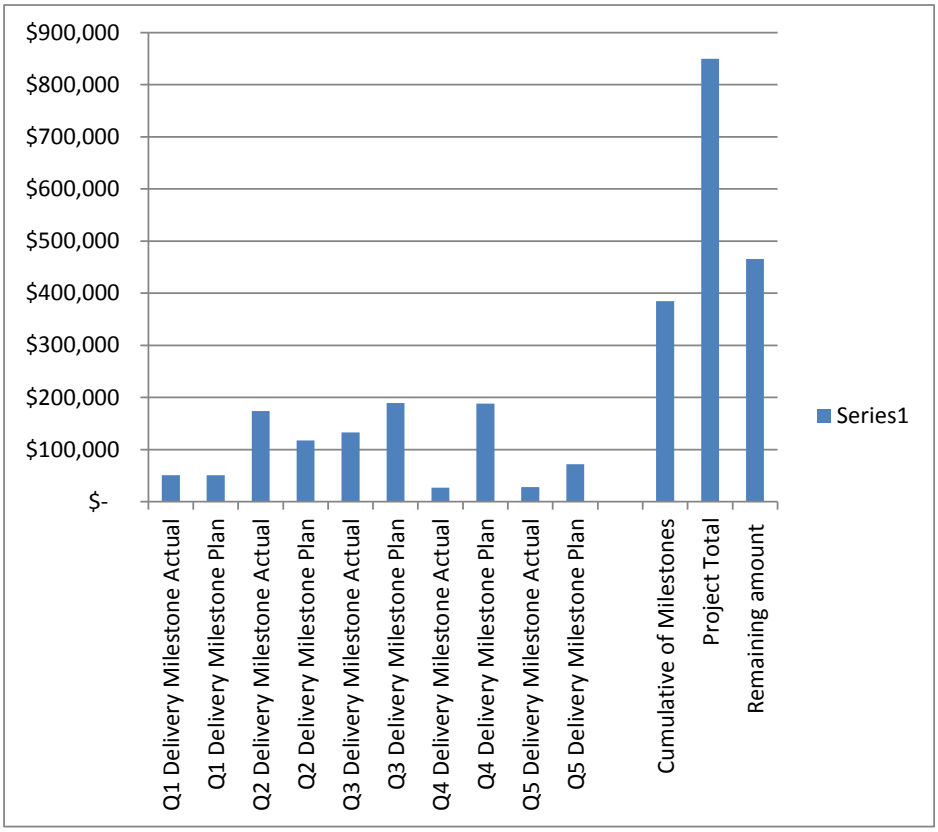


**Figure 1, The RASMLS project is behind the plan through the fifth quarter. Prototype instrument completion is slipping due to late delivery of the 10 kHz laser assembly.**

## 1.1 Technical Status and Progress

**Delivery Milestone D11, Task T0, Technical and Project Management (accomplished):** This task consists of a level-of-effort for project system engineering, project management and business administration. Effort associated with this milestone includes preparation of this Report.

**Delivery Milestone D4, Task T2, Early Flight Test and Data Collection (additional, unplanned testing accomplished):** This activity and milestone was completed in May of 2016 and follow-up flight testing was accomplished in August of 2016 and reported in the 4$^{th}$ quarter of the project.

Even more early flight testing was completed in October of 2016 with funding from a commercial customer. Flight altitude and swath width were increased beyond the levels achieved in August. The data revealed a path to improved performance that was not previously identified.

**Delivery Milestone D9, Task T3, Finish Assembly of the RASMLS-Specific Instrument Prototype (not accomplished):** D9, Task T3 has slipped further. Delivery by our supplier of the 10 kHz laser assembly has slipped from November into January of 2017.

**Delivery Milestone D10, Task T4, Finish Leak Rate Quantification Algorithms (not accomplished):** This milestone is also slipping into Q6. This is due to three factors described in the full report.

**Delivery Milestone D11, Task T5, Flight Testing (not accomplished):** This milestone is also slipping into Q6, and possibly Q7, due to the slip in completing the prototype.

## 2.0 Business Status –

## 2.1 Budget Analysis: Budgeted, Actual and Cumulative Expenditures

Project cost is detailed in the full report.

Ball Aerospace performs internal quarterly reforecasting and re-assesses the estimate to complete (ETC) and estimate at completion (EAC) on all projects. This reforecasting takes into account issues that have been encountered and any changes in the design, test and procurement planning. The internal reforecasting process advises the analysis and conclusions presented in this *Business Status* section.

## 2.2 Contributions Analysis

***Contribution analysis is presented for the Delivery Milestones completed in the fifth quarter in the paragraphs below.***

***Delivery Milestone D11, Task T0:*** No Cost Share contribution is associated with this Delivery Milestone.

***Delivery Milestone D4, Task T2:*** Additional Cost Share contribution associated with Delivery Milestone D4 was accomplished in Q5 with the completion of additional flight testing in October.

## 3.0 Schedule

The project Pert chart and schedule is show in **Figure 3** (next page).

## 4.0 Payable Milestones

As described in Sections 1 and 1.1, above, payment Delivery Milestone D11, has been achieved and should be invoiced this quarter.

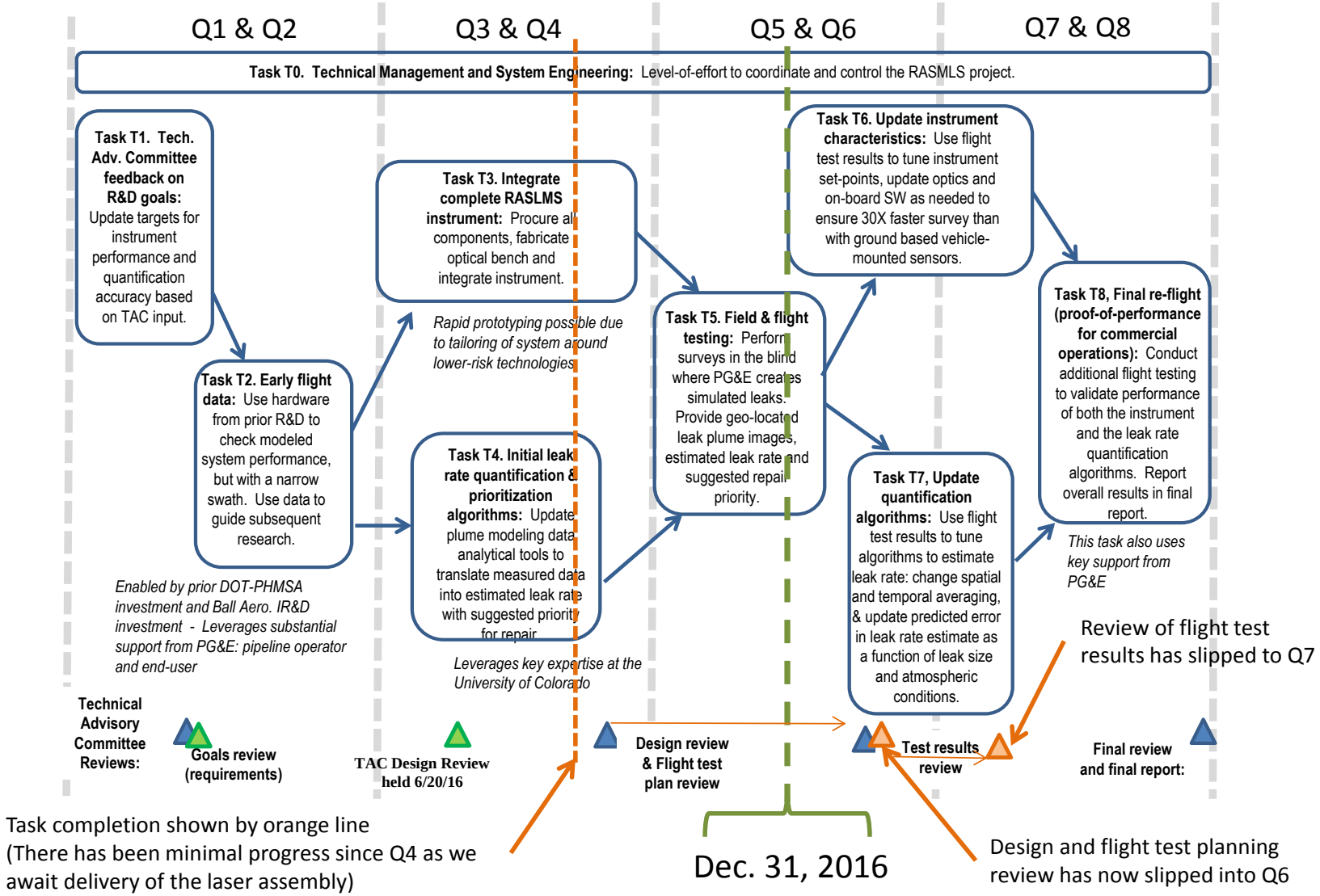


**Figure 3, RASMLS project schedule has slipped by 5-6 months through the fifth quarter of the project, but we remain confident all project Tasks and Milestones can be completed within the 24 month duration**